DI9GF–02

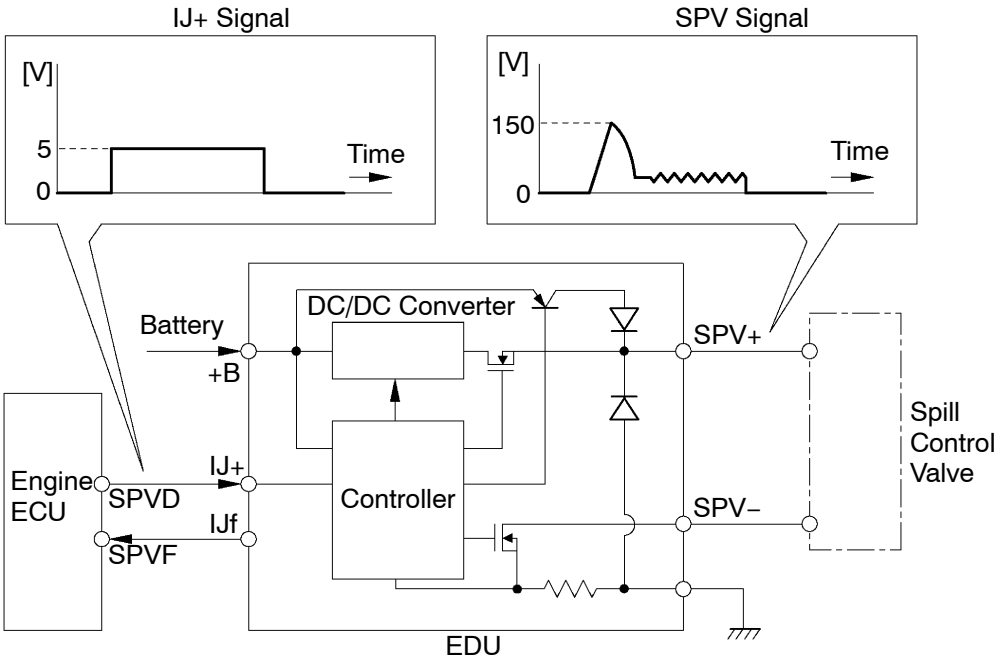
DTC	97	EDU Circuit Malfunction

CIRCUIT DESCRIPTION

The EDU has been adopted to drive the spill control valve at high speeds. The EDU has realized high–speed driving under high fuel pressure conditions through the use of a DC/DC converter that provides a high–voltage, quick–charging system.

The engine ECU constantly monitors the EDU and stops the engine in case an abnormal condition is detected.

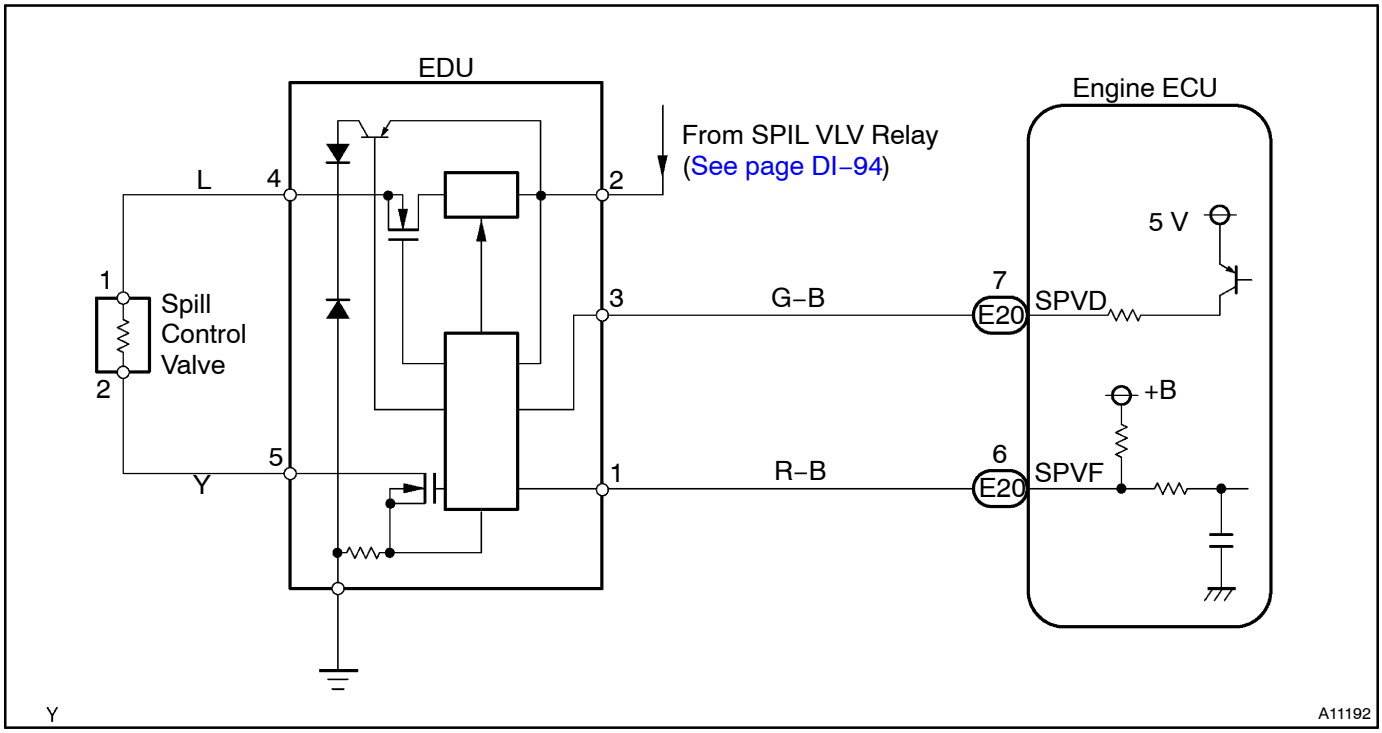
The battery voltage is increased by the DC/DC converter. A voltage of approximately 150 V is applied to the spill control valve in accordance with the IJ+ signal received from the engine ECU. Also at this time, the injection verification signal (IJf) is sent to the engine ECU.



A05973

DTC No.	DTC Detecting condition	Trouble Area
97	Although SPVD is output to EDU with engine speed at 500 rpm or more, SPVF is not input continuously 5 times or more	• Open or short in EDU circuit • EDU • Spill control valve

WIRING DIAGRAM

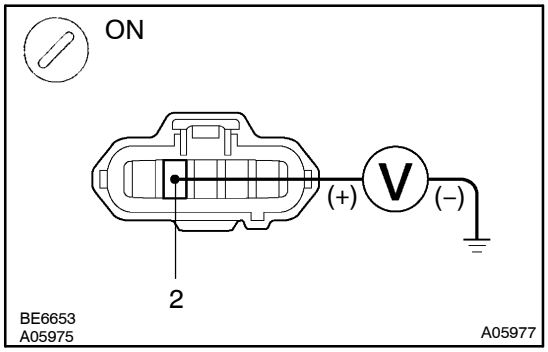


INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand–held tester. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air–fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check voltage between terminal 2 of EDU connector and body ground.**



PREPARATION:

(a) Disconnect the EDU connector.

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal 2 of the EDU connector and body ground.

OK:

Voltage: 20 – 28 V

NG	**Check ECU power source circuit (See page DI–96).**

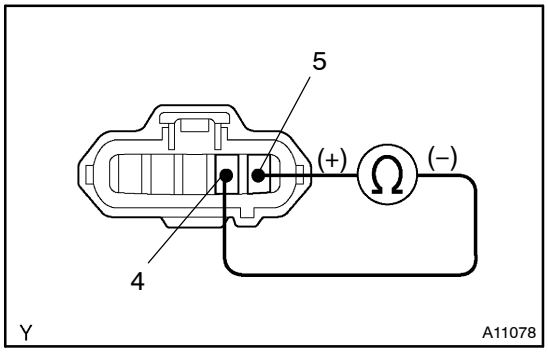
OK

2	**Check continuity EDU ground bolt and body ground.**

NG → **Tighten EDU ground bolt.**

OK

3	**Check resistance between terminals 4 and 5 of EDU connector.**



CHECK:

(a) Disconnect the EDU connector.

(b) Measure the resistance between terminals 4 and 5 of the EDU connector.

OK:

Resistance: Approx. 1.7 Ω

OK → **Go to step 6.**

NG

4	**Check spill control valve (See page ED–6).**

NG → **Replace injection pump (See Pub. No. RM464E FU section).**

OK

5	**Check for open and short in harness and connector between spill control valve and EDU (See page IN–20).**

NG → **Repair or replace harness or connector.**

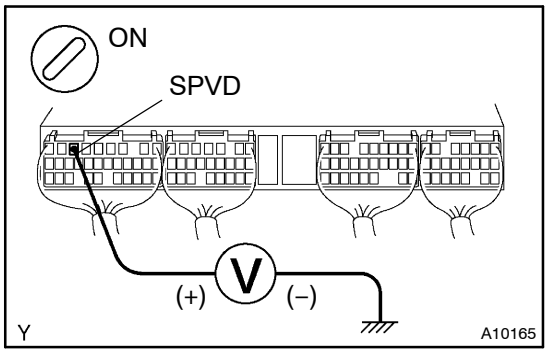
OK

6	**Check for open and short in harness and connector between engine ECU and EDU (See page IN–20).**

NG → **Repair or replace harness or connector.**

OK

7	**Check voltage between terminal SPVD of engine ECU connector and body ground.**



PREPARATION:

(a) Disconnect the engine ECU from the body bracket (See page ED–30).

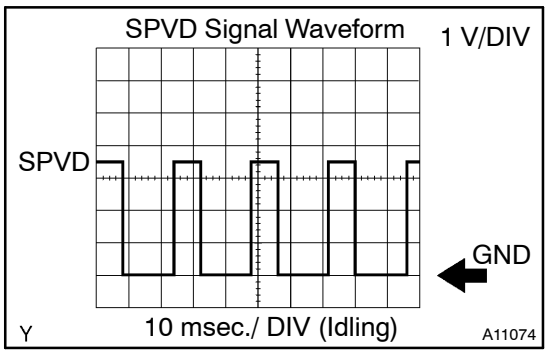
(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal SPVD of the engine ECU connector and body ground.

OK:

Voltage: 4.5 – 5.5 V



Reference: INSPECTION USING OSCILLOSCOPE

During idling, check the waveform between terminals SPVD and E1 of the engine ECU connector.

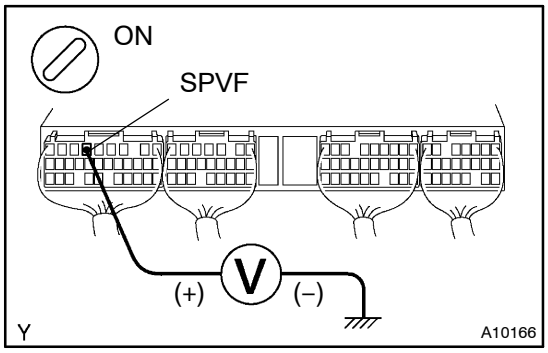
HINT:

The correct waveform is as shown.

NG → **Check and replace engine ECU (See page IN–20).**

OK

8	**Check voltage between terminal SPVF of engine ECU connector and body ground.**



PREPARATION:

(a) Disconnect the engine ECU from the body bracket (See page ED–30).

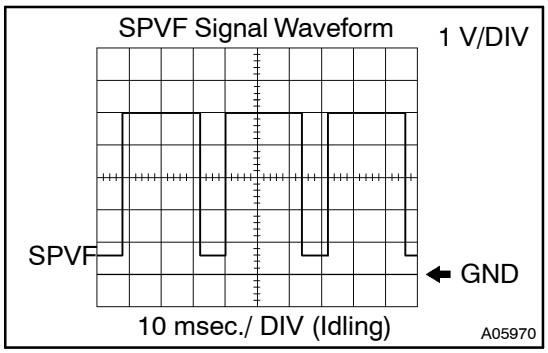
(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal SPVF of the engine ECU and body ground.

OK:

Voltage: 18 – 27 V



Reference: INSPECTION USING OSCILLOSCOPE

During idling, check the waveform between terminals SPVF and E1 of the engine ECU connector.

HINT:

The correct waveform is as shown.

OK → **Check and replace engine ECU (See page IN–20).**

NG

Check and replace EDU.